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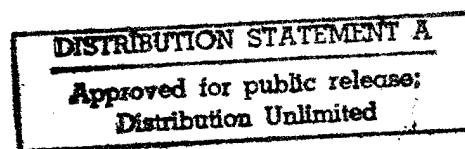
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30 June 1983

# West Europe Report

SCIENCE AND TECHNOLOGY

No. 148



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## WEST EUROPE REPORT SCIENCE AND TECHNOLOGY

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## BIOTECHNOLOGY

### BRIEFS

GENETIC ENGINEERING RESEARCH--The Federal Minister for Research and Technology (BMFT), in a joint effort with the chemical industry, is planning a fund for the support of future scientists in the border region between chemistry, biology and technology. Minister Riesenhuber said in Bonn that new forms and models of cooperation between science, industry and government must be developed "when it comes to the advancement of growth industries." Other manifestly positive pronouncements were also made. According to Riesenhuber's statements, the financial portion of this cooperation between government and industry will amount to approximately DM 10 million, spread over 2 years; the BMFT is to contribute 40 percent of this fund. The BMFT is of the opinion that these measures will significantly add to the genetic technology centers in Koeln, Heidelberg and, soon, in Muenchen too. In this area, science, industry and government already work extensively together. Riesenhuber: "Only through the coordinated action of the concerned parties can we ensure that the Federal Republic of Germany will not lose contact with biotechnology." [Text] [Duesseldorf VDI NACHRICHTEN in German 18 Mar 83 p 1] 12330

FRENCH 'BIOTECHNOLOGIES' PROGRAM--Paris--The publication CNRS INFO announces that Mr Pierre Papon, director general of CNRS (National Center for Scientific Research), has decided to create within that organization a three-year integrated program named Biotechnologies, intended to be part of the national program Flourishing of Biotechnologies. This program involves three scientific sections: physical sciences for engineers, chemistry, and life sciences, with the latter being responsible for coordinating and encouraging the activities of the sections in this field. Those in charge of these sections will represent CNRS at the national organizations managing the overall program, as well as be responsible for the implementation of the program in their groups. [Text] [Paris AFP SCIENCES in French 14 Apr 83 p 40] 11,023

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## ELECTRONICS

### EEC'S ESPRIT PROGRAM TO DEVELOP INFORMATION TECHNOLOGY

Paris ELECTRONIQUE ACTUALITES in French 27 May 83 pp 1,7

[Article by P. Schaeffer: "With the ESPRIT Project: The EEC Prepares to Invest Fr 5.2 Billion in Industries Dealing in Information Technology"]

[Text] Brussels--The European Community is preparing to invest 750 million ECU's [European currency units]--about 5.2 billion francs--over a period of 5 years starting from 1984 in order to help European industry to capture a significant share of its own market in the area of technologies having to do with computer communications.

We are talking, in fact, about an ambitious plan, which should be officially approved before the end of the year by the Community's Council of Ministers after consideration by the European Parliament in Strasbourg. However, in late June the Council of Ministers should be providing an initial response to the program along favorable lines, which is what has been hoped for and has been foreseeable in view of all of the preparatory work.

We have already talked about this plan (especially in our 11 February 1983 issue), which has been given the program name ESPRIT. Its aim is to see to it that European industry takes advantage of the expansion in the European market in information technologies, and also to do it in such a manner as to reduce the overall import-export deficit in that market. The trade balance in that market went from being positive in 1975 to registering a deficit of 5 billion dollars in 1981 and 10 billion dollars last year.

The ESPRIT program will extend over 10 years. At present the discussion is about implementation of an initial 5-year phase, to take effect in 1984 and involve Fr 5.2 billion. This phase has been preceded by a pilot operation started in 1982 and which this next June should end up having allocated Fr 80 million worth of assistance to about 35 projects submitted jointly by about 100 European firms.

Providing a rundown for the benefit of the European press on the ESPRIT program's state of progress, the program's officials Messrs Carpenter, Cadiou and Hunke recalled its ultimate objective: to contribute toward seeing that European industry plays an active role in the world market of communication technologies by helping it to devise products of a new generation of which some could become in fact standard items on a world level.

Quite obviously the ESPRIT program fits well into the general framework of the research programs supported by the Community, but the program has the special characteristic of being very much oriented toward improving industrial competitiveness in the key areas of the present decade. Besides, very early on the big manufacturers became involved in the project with about a dozen firms including Thomson, CGE, and Bull from France, alongside ICL, Plessey, Philips, Siemens, AEG, Nixdorf, Olivetti, etc.

### The Priorities

In terms of its objective, ESPRIT is more a development program than a pure research program. ESPRIT's promoters quite readily say that it is a research program "which is in what is called a precompetitive phase." The program establishes five major areas of activity, three of them considered "indispensable gateways" in order for the strategy to succeed. Those three are:

- advanced microelectronics, in which better circuit technology must be developed (smaller, more powerful, and more reliable circuitry), in order to enable assemblies to have greater capabilities or to perform more functions: although Europe purchases one fifth of the integrated circuits in the world market it only produces 6 percent, and it needs uniformity of design, production, and inspection for very large scale integration (VLSI) circuits;
- advanced information processing, in order to open up new modes of direct communication between man and machine--such as speech and imagery--, along with functions which will be reminiscent of human thought processes; and,
- software technology, since advanced information processing calls for new generation software.

The mastery of those three technologies, which constitute "indispensable gateways," opens the way to all possible applications and represents a basic competitiveness factor, mainly in:

- office automation, in regard to which the research will devote itself most particularly to certain aspects of intelligent interactions between man and machine, such as communication integrating image and speech, and to the production and distribution of documents; and,



- manufacturing managed by computer science, where research directed at automation in factories will be concerned with the design of integrated systems, particularly robotics. That will require new development in microelectronics and in software.

### The Method

The managers of ESPRIT wanted to establish flexible procedures, considering that both market needs and technologies change over time, and they have set up a novel method to attain their objectives.

In terms of principles, the rule that has been laid down is that any industrial project which is going to be financed must be submitted by at least two manufacturers from two different Community countries. That provision (which does not exclude industrial subsidiaries of multinational firms established in Europe) is aimed at promoting in the future some industrial reconciliation in order to achieve a scale effect. Another rule that has been laid down is that manufacturers submitting plans agree to invest in them to at least the same extent as the amount the Community will be giving to them. That provision will have the effect in practice of doubling the amounts allocated to the ESPRIT program; so from a base of Fr 5.2 billion the amounts will work out to be something in the region of Fr 10 billion. That total sum, which seems high at first glance, is approximately 10 percent of research expenditure by European industry in this sector. The 50-50 rule in the financing of projects is not sacred with regard to small and medium-sized businesses; it is in fact anticipated that various compromise arrangements will be made for those businesses enabling them to benefit from Community assistance in spite of their limited scope for self-financing, because their capabilities for innovation are well-known.

In addition to the principles there is the method. ESPRIT's managers are in a strong position because of some past experiences, and in putting together their program they have been fairly pragmatic about its accomplishment.

Firstly, the full program entails 10 years, and it is preceded by a pilot phase. The main objective of that phase, which is currently underway, is to carry out pre-start-up of the program itself in the areas considered essential, while awaiting approval of the entire project by the Council of Ministers; but it also has the objective of making sure that European industry is meeting expectations, and on this point ESPRIT's managers have been gratified. After the pilot phase comes a 5-year phase of program execution, which will be followed by a second execution phase, also over a 5-year period, and the definition of that latter phase will start 3 years after the first 5-year phase has begun. Through these stages it will be quite possible to provide corrections in one direction or another.

Although the ESPRIT program's subject areas, along with the priorities we have mentioned, are fixed, the substance in the areas will be subject to change, today's substance not necessarily being tomorrow's.

Thus, no project is meant to require long-term research. Any project initiated must be able to be completed within a relatively short space of time--2 to 3 years. Each year the project is "reevaluated," even if that entails orienting it differently in accordance with technological changes or market needs. The main thing is really for the project from conception to be capable of changing according to circumstances and not, therefore, to be frozen.

Two types of projects are possible. One is projects that are highly sophisticated but are in relatively well-known channels. The other is projects with newer ideas but with big risks (and big profits in the event of success). Of course links between these two types of projects are anticipated, as are links with programs already developed in Community member states and links with the Community's own program in the microelectronics field.

The method brought into play for ESPRIT therefore displays some elements for the management of this type of program which elements, by their nature, are particularly novel. To judge by the number (and the quality, say ESPRIT's managers) of submissions sent in for the pilot phase, this method seems to be arousing a certain amount of enthusiasm. For the pilot phase, applications have in fact been filed for some 200 projects joining together 600 participants; only 35 of the projects--in 16 subject areas and bringing together about 100 partners--have been accepted in actuality, and they will before long receive official notification (nothing will be made public before then). Those 35 projects are fitted into a Fr 160 million financing plan, half of which will be borne by the Community and half by the submitting parties. The 200 projects on file represented financing of Fr 700 million (to be borne 50-50), and many of them probably will be taken up again in the ESPRIT program's first phase.

#### An Overall Policy

As it stands, the ESPRIT program is now entering into a political stage, in the sense that it is the Community's political decision makers who are going to rule on its fate. The fact that the pilot phase was approved last year augurs well for what will follow.

Yes indeed, but we are talking here about political choices, and the question is whether, as the EEC Commission thinks, the major part if not the totality of the European information processing industry will be disappearing in a few years unless it cooperatively carries out an industrial program of sufficient scope. The manufacturers, for their part, are now prepared--and this is a new phenomenon--to cooperate among themselves, aware as they are that the sort of investment required surpasses their individual capabilities.

It would be surprising if the EEC political authorities were insensitive to this situation.

## ELECTRONICS

### ESD, OLIVETTI TO PRODUCE POINT-OF-SALE TERMINALS

Paris ELECTRONIQUE ACTUALITES in French 4 Mar 83 pp 1,4

[Article by Ph. Marel: "The French Cash Register Project -- In 1984, ESD and Olivetti Will Produce 18,000 TEMCO Terminals"]

[Text] By the end of the year, Olivetti and ESD [Serge Dassault Electronics] will launch the production phase of the TEMCO [Multi-trade Cash Register Terminal] project, which will lead to the production of 18,000 terminals in 1984. By 1988, the two companies expect to be producing a total of 115,000 systems, two-thirds of which will be exported. The remaining one-third should cover 35 percent of the French market for point-of-sale terminals. These prospects are all the more ambitious as today French industry is virtually absent from this area.

In response to the call for joint offers made by DIELI [Bureau of Electronics and Data Processing Industry] and the PTT [Posts, Telegraph and Telephone Administration] a year ago, Olivetti and ESD will have taken less than 2 years to begin production with the TEMCO project. As early as September 1983, the 200 first TEMCO's will be delivered to clients for testing (100 from Olivetti and 100 from ESD).

The production, which is to take off during the first semester of 1984, should make it possible for the manufacturers to supply 18,000 machines this same year (15,000 by Olivetti, 3,000 by ESD).

By the next year, this production will adopt a cruising rate which will enable it to reach 115,000 systems by 1988 (90,000 for Olivetti, 25,000 for Dassault).

The ambitions of the manufacturers and the requirements of the DIELI are such that, from the very beginning, two-thirds of this production will be exported, that is to say 12,000 machines in 1984 and approximately 75,000 in 1988. Whereas the country's trade deficit in this area is now 700 million francs per day.

The remaining one-third will cover approximately 35 percent of the national needs for this type of product.

But French industry which, with the exception of small manufacturers such as ADS [Anker Data System?], is virtually absent from this area today, will be dealing with tough opponents. At the European level, the major controllers of this market -- with, according to a recent IDC [expansion unknown] survey, 59.7 percent -- have American names (NCR, IBM, DTS, Sweda).

The European manufacturers (ICL [International Computers Ltd], Nixdorf, Ericsson) -- with, still according to that survey, a total of 19.2 percent -- are not even masters at home.

Finally, the Japanese represent a substantial share -- the remaining 21.1 percent --, either directly (Sanyo, Omron, to list only two) or, through their OEM [expansion unknown] clients (for example, Olympia, which distributes Omron terminals under its own name).

These proportions are approximately the same on the French market, with IBM and ICL being somewhat heavier, and Nixdorf and Ericsson somewhat lighter.

Still in France, today Olivetti claims only a 4 percent share of the market, especially not the lower end of the range (a level which is favored by the Japanese).

#### Innovation and Cooperation

But if the struggle is shaping up as a tough one, the market can also carry a great deal. Still according to IDC, the market in Europe should go from 83,000 machines by the end of 1981 to 500,000 in 1988, with 120,000 machines by that date for the French market alone. Taking such an expansion into account, there is a real opportunity to grab here for French industry which, with the help of DIELI (a total of 100 million francs, divided among two manufacturers), and the active participation of future clients in product development (Docks de France, Casino, Nouvelles Galeries, etcetera...), has decided to introduce a new generation product.

The TEMCO will be a real point-of-sale microcomputer, with a memory ranging from 64 to 512 K [kilobytes] in the case of the Olivetti product (to 256 K for the ESD product). In both cases, it will be able to use diskettes (of 1 M [megabyte] at Olivetti) and hard disks of 6 M, and all types of peripherals and printers, scanners, laser scanners, cash drawers, etcetera, including, as soon as the standardization becomes effective, memory card readers. Finally, as evidence of realism, the TEMCO's will, from the very beginning, be equipped with IBM interfaces. Their base price will be on the order of 20,000 francs.

In fact, in contrast with its numerous competitors, TEMCO will be very modular, and with the possibility of functioning both as an autonomous unit or integrated within a local network (for example, several units connected to a concentrator in a mainframe), it will meet very diverse needs.

TEMCO will thus be able to handle the cumulative functions of microcomputers and of cash registers at the level of small businesses, or make possible the handling of decentralized data in the same way an intelligent terminal in a mainframe would.

## New Activity for Logabax

Logabax will be manufacturing the TEMCO's at its Meaux plant on behalf of Olivetti.

This activity is new for Olivetti's French subsidiary which, in spite of a net improvement of its profits in 1982, had to abandon the manufacturing of its bottom of the line printers because of the Japanese competition, and which is increasingly faced with fierce competition in all directions on the mini- and macro-data processing market.

Olivetti itself admitted that this second chance for Logabax amounts to a difficult bet, because of the improbability of choosing to develop in France, a product whose competitors most often come from factories in South East Asia, where the labor costs are infinitely lower. The marketing of TEMCO by Olivetti will be done through the usual channels (by itself for the large customers, SSCI [expansion unknown], distributors etcetera for small clients) with probably the Logabax trademark in France and the Olivetti trademark for exports.

One might wonder whether, aside from large customers -- who have often participated in the development of the products and are thus completely captive --, the Olivetti network is equipped to market such sophisticated data processing systems.

The Italian firm is already faced with this problem in terms of the distribution of its microcomputers (the M-20 and soon the M-40).

As far as the ESD is concerned, manufacturing will be entrusted to subcontractors, while the firm itself will handle the inspection and final assembly of the product, but apparently the location for this final production stage has not been determined yet. The marketing problem is even more acute for ESD, which is not a regular on this high volume data processing market.

On the French market, the major accounts represent a potential as captive for ESD as for Olivetti. With the SSCI, distributors, retailers and other channels, ESD intends to play the card of its know how in terms of automated tellers, and that of the "bonus" given to a 100 percent French manufacturer.

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## ELECTRONICS

### CII-HONEYWELL BULL COMMENTS ON COMPANY STRATEGY

Paris ELECTRONIQUE ACTUALITES in French 4 Mar 83 p 4

[Article by PS: "CII-HB's New Strategy: Realism and No Surprises"]

[Text] Last week, CII-HB commented at length on the strategy it will follow to achieve the company plan it concluded with the state (see our issue of 18 February). This strategy is based on the changes which are taking place within the data processing sector, with the growing importance of micro-components, maintenance and program packets, which implies that the company will direct its efforts more toward services offered to the users (in terms of operation facilities in all forms), and this in collaboration with project development and service companies. Which also implies a balanced, broadened and significant presence on the data processing market, and on the OEM peripherals market.

When they presented the CII-HB 1982 annual report (a turnover of 8.13 billion francs, that is to say an improvement of 10.70 percent, and operating losses of 1.3 billion francs, while new investments have exceeded 1 billion francs and the financing of research and development itself has come near to 0.8 billion francs), Mr Stern, president of the group, and Mr Lorenz, general manager, also provided useful information on the framework within which they intend to develop their strategy to achieve the objective of financial balance by 1986 and to become, by 1990, a major group on the world information systems market.

The views held at CII-HB are primarily that the growth pattern of the various segments of the market in the coming years will be unequal, and that it is especially important to be strong in those sectors which will experience the strongest growth, but without neglecting the strategic importance of large and medium sized system installations which act as an impetus to the other sectors.

Obviously, the "vulgarization" of data processing, resulting from a drop on the order of 20 percent per year of the price-performance ratio and from a growth rate of the power capacity on the order of 45 percent per year, will be reflected in the growth in value of the medium and large systems pool in Europe. This growth can be considered to be approximately 11 percent: it is small, but for CII-HB it represents 27 percent of the number installed in France and 12 percent of the number installed in Europe in 1982, which leads

to a strategy aimed at expanding and protecting this pool by developing it, because it represents a potential for the sale of additional equipment, of peripherals and of services.

The market is progressing at the rate of 16 percent for mini-data processing and small management systems, and at the rate of 30 percent for the office automation and micro-data processing sectors as a whole. It is in the latter sector that CII-HB intends to take a significant place, based on a systems and networks approach. It already has strong capacity in terms of networks (DSA [digital signal analyzer] which will make its products compatible with those of its competitors; next, it possesses a "critical mass" (2 billion franc turnover); finally, it is considering filling out its range within the framework of cooperation agreements with French companies (among which, those of the Peri-Data Processing Club) and also with foreign companies. Hence, prospects on this market in full expansion are good.

On the other hand, whereas peripherals represent an increasingly important part (40 percent) of the total costs of the systems, the group believes that it will be able to broaden its activities in the areas of disks and sub-systems and of magnetic printers in order to become a top European supplier in this area, with the objective of securing the production of 40 to 50 percent of its own needs by 1986.

All these strategy lines are of an industrial order, a strategy which strives to concentrate effort on the most promising sectors while maintaining the development of the systems pool, which is the pivot of a whole set.

Then there is another remaining sector whose growth in the years to come should be strong, that of the market of services (a growth on the order of 20 percent over the next 4 years in Western Europe, excluding Great Britain and Italy). CII-HB does not want to be absent from that sector. But it does not intend to play a solitary role there. It intends to develop, in cooperation with project development and service companies, and with the users, the supply of services and of implementation programs, defined on the basis of market needs, within the framework of a sectoral approach. As a matter of fact, "data processing manufacturers will increasingly have to offer a complete product in which, over the next few years, the share of services (maintenance included) will exceed that of the equipment."

Thus, one notes that CII-HB, taking into account the growth (and thus the profit opportunities) of the various segments of the market, will operate across the board but will adjust its effort for each area. As a result, it expects a 17 percent yearly growth of its turnover (9 percent in constant francs) and a return to a balanced situation by 1986. Further, by that time the problem of its financial burdens which affect the current returns, will be solved (with the help of the state).

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## ELECTRONICS

### PRESIDENT OF COMPAGNIE DES MACHINES BULL INTERVIEWED

Paris ZERO UN INFORMATIQUE MENSUEL in French Apr 83 pp 105-109

[Interview with Jacques Stern, chief executive officer of the Bull Machines Company, by Jean-Marc Chabanas and Michel Barreau; date and place not specified]

[Text] According to the minister of research and industry, when the Bull Machines Company signed its operating contract a few weeks ago, it kicked off the French computer industry policy. The objective of the Bull Machines Company is ambitious: a 17 percent annual rate of growth and 15 billion francs in sales for 1986 (SEMS [Electric, Mechanics and Signal Company] excluded), while retaining a positive balance of trade. This month, Jacques Stern, chief executive officer of the Bull Machines Company and its principal subsidiary, CII-Honeywell-Bull, answers the "free questions" of ZERO UN INFORMATIQUE MENSUEL.

[Question] The authorities and yourself have much insisted on the innovating character of the PAFE program (Program of Action for the Electronic Sector) which, as far as your group is concerned, just resulted in the signature of an operating contract. But what are the basic differences between the PAFE and previous computer-industry plans.

[Answer] The PAFE cannot be compared in any respect with a computer-industry plan. First, it is not a plan but a program of action. Then, it deals not only with data-processing, but with the whole electronic industry. To my knowledge, this is the first time that a survey on such a scale is made in Europe. The PAFE gives an in-depth analysis of all aspects of the industry and formulates very detailed recommendations. The operating plan which we submitted to the authorities is in line with the government's present efforts in favor of the electronic sector. The operating contract we have signed takes up the suggestions made in the operating plan and determines our mutual obligations.

[Question] The approval of your operating plan, i.e. the operating contract signed with the state, is accompanied by a capital contribution of 1.5 billion French francs in 1983. Engineering and research contracts amounting to 500



million francs for that same year have also been mentioned. In what respects are these amounts--to quote your own word--less "homeopathic" than those allocated under previous computer-industry plans?

[Answer] In the operating plan, we estimated the minimum amount that would enable us to restore our balance within the shortest possible time and retain the indispensable industrial calling of our company. Let me remind you that we must both restructure the company's capital and reduce to a reasonable level our self-financed research and development expenditures. The operating contract does provide for a capital contribution of 1.5 billion French francs, to be compared with the previous shareholders' contributions of 300 million francs over four years.

When I spoke of homeopathy, I was comparing the state's efforts in favor of the computer industry with those it made in favor of the nuclear, space or telephone industries. Some have said that, despite considerable amounts, the French computer industry was going from failure to failure. That is not so, and they should first stop talking about a bottomless pit that never existed.

[Question] Do you think that the efforts announced by the authorities, who have published a figure only for 1983, will be sufficient?

[Answer] As I just said, it is a considerable effort and it meets our expectations. It should be understood, however, that restoring our balance will take a relatively long time. What is important for us is to be competitive on the international market and under conditions equivalent to those of our foreign competitors.

As a whole, however, our message remains valid: "We cannot build the French computer industry at a discount." Our plans are rigorous and precise, and the means requested--the amounts we have indicated--are a must.

[Question] What will be the contribution of the engineering and research contracts we just mentioned?

[Answer] In 1982, our self-financed research and development expenditures amounted to over 9 percent of our sales. This percentage is excessive, especially if we compare it to those of our competitors (approximately 6 percent) who benefit from large public engineering contracts. To restore the financial balance of our group, our objective is to reduce these expenditures to 7 percent of our sales figures. This is a very reasonable objective.

Our development plan is both ambitious and realistic. We want to be one of the leading groups worldwide by 1990.

But we are also going to be cautious about it. For instance, we did not hesitate to discontinue some engineering programs and reorient others. Finally, we plan to develop close cooperation relations with public research centers and other manufacturers in the electronic sector.

[Question] Yet, is not your objective of achieving profitability by 1986 too ambitious?

[Answer] Quite to the contrary; we see it as a deadline.

[Question] Did 1982, then mark a low ebb?

[Answer] The measures we have taken cannot have immediate effects. Our priority was to stop the tide. We must now turn it. This is going to be our task in the coming years.

[Question] In addition to direct state aid, do you also expect support in the form of public contracts, in other words do you expect to see the policy of preferential purchase by public administrations and enterprises continued or even accelerated?

[Answer] We are not looking for any commitment of that type. If we are to win, our products must be good and competitive. Any guarantee of a "protected market" could only induce us to relax our efforts in that respect.

[Question] Will the competitiveness you are hoping for be enough?

[Answer] Yes, for we are assuming that the market will be buoyant and in full expansion. Our growth objective during the suggested plan period is higher than that of the market. We are thus counting on an annual growth of 17 per cent, compared with an average of 12 percent.

This objective cannot be achieved without sustained strong growth on both the private and international markets. I don't have to remind you that our group does not benefit from any captive market and that all of its national and international sales take place on a competitive market.

[Question] Does that mean that you will have to reorient your production?

[Answer] It is not a reorientation, but an adaptation to new and rapidly developing market trends, to take into account the customers' new demands. What we must do is to shift from a product market to a solutions market and establish ourselves on the most strongly developing subsectors where no company has yet acquired a dominant position. These are, for instance, office automation and microcomputers, two fields where development is faster than in that of large central processing units. In 1986, our sales breakdown will no longer be what it is today.

[Question] Will this evolution bring about changes at company personnel level, or even more radical measures, like those adopted by the British International Computer Ltd. group, which reduced its personnel by one third?

[Answer] International Computer Ltd. appears to have chosen a strategy quite different from ours. Our plan provides that the group will retain its industrial calling, and its personnel their jobs.

But our trade is changing and there must be a permanent adaptation of our personnel to these changes. Besides, as you know, training enjoys a privileged status among the strategic orientations of our operating plan.

[Question] A moment ago, you said it was necessary to have "good and competitive products." Now, judging from what we have been told by present users, especially on the occasion of the annual satisfaction survey carried out by ZERO UN INFORMATIQUE and DATAPRO, they are definitely disappointed. What do you plan to do about that?

[Answer] There again, we have placed quality in the foreground of our operations. To us, it is a "strategic priority"; all in the company are aware of it and it is everybody's personal objective. We have already accomplished many efforts. They should show in your next survey.

[Question] Are you contemplating agreements with other companies?

[Answer] Technical and commercial agreements with Honeywell are an essential part of our group's strategy. In this respect, we should mention that these agreements, which will extend over a 10-year period, are entirely independent from the financial agreements. This collaboration is a definite asset on the international market. We may also try to augment our catalog with other products.

[Question] What benefits will you derive from the acquisition of SEMS and Transac?

[Answer] First, you should realize that we have never wished to become a monopoly in France. This restructuring was logical and was thought desirable by the authorities in the national interest. They will strengthen our group in the sectors of distributed data-processing and office automation.

SEMS and Transac will remain legally independent subsidiaries.

[Question] Does that mean that you are going to retain competitive product lines, for instance for minicomputers?

[Answer] Of course, we are not going to retain three parallel lines forever. We must protect all of our customers' investments. The new policy will take this important factor into account. In other words, we shall continue to manufacture Solar, Mitra and Mini 6 systems.

In the past, our group has demonstrated its ability to carry out a policy of merger. For instance, the merger between the Iris and 64 lines was a total success.

[Question] Finally, a personal question. You were chief executive officer of a data-processing engineering company that was the European, if not the world leader in its field; why did you accept to come to CII-Honeywell-Bull and what criteria of success have you set for yourself?

[Answer] I have no personal success criteria or objectives. All my professional life has been devoted to the computer industry. My motivation has always been to contribute to the construction of a strong national computer industry that would be independent, competent and competitive. I have always had faith in our national abilities, our distinctive genius and our determination to succeed. I am not one of those who first give advice and later on explain why we failed.

I have always closely followed CII-Honeywell-Bull and showed great confidence in its abilities. I had no hesitation in accepting the honor that was offered to me to manage this company and, therefore, the national computer industry. I am aware of the responsibility attached to this position. When I came to CII-Honeywell-Bull, I was not disappointed. I found men with great qualities and competence, who were strongly motivated and were all personally committed to demonstrating to the country that our company could succeed in the ambitious objectives we determined jointly. Today, I have no right to disappoint them.

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## ELECTRONICS

### STRATEGIC PLANS OF SGS HEAD DISCUSSED

Paris ELECTRONIQUE ACTUALITES in French 15 Apr 83 p 21

/Article by J. P. Della Mussia: "SGS /General Semiconductor Company/ at a Turning Point. The Company Attacks the Standard Linear C1 Market"/

/Text/ Three years after the arrival of Pasquale Pistorio at the head of SGS, in 1980, one of the goals set at that time--to double turnover in three years--is being achieved (300 billion lira in 1983 as compared to 150 in 1980; see Electronique Actualités, June 12, 1981).

Even if this doubling is helped along by a high Italian inflation rate (18 percent in 1981; 17 percent in 1982; 16 percent probably, in 1983), this result is still noteworthy in the present situation and is explained by the nationalization efforts which have been undertaken, an export offensive (30 percent of the turnover from semiconductor sales volume outside Europe in 1982 as opposed to 16 percent in 1980), and the relative protection which the company benefits from in the price area: Its bipolar linear circuits (42 percent of the turnover) are in effect original products which are for the most part without major competition.

But to pursue such a course implies a progressive departure from being a company which fills supply gaps and a jump into the manufacture of standard circuits. And standard circuits mean selling prices fixed by the market and profits or losses according to conditions prevailing at the time.

SGS thinks that it doesn't have a choice. For this company it is a matter of achieving a critical size and then eliminating the still high but diminishing losses (of around 30 billion lira in 1982 following a peak in 1980-1981 and starting at 23 billion in 1979). SGS believes that its production bases are sufficiently healthy today to absorb the shock of the standard circuit. It is starting with bipolar linears, regulators and operational amplifiers. It is following up with a production increase in MOS (18 percent of the turnover in 1981; 30 percent in 1983).

SGS can't claim that its MOS activity is profitable in the short term but it has strategic value. SGS claims on the other hand that its production of

standard linear circuits is generating immediate profit, even in a depressed market.

#### Four Principal Efforts

Mr Pistorio's first effort, in 1980, was to nationalize production, primarily of MOS. P-channel technology was abandoned at that time, along with the manufacture of RAM. Later, priority was given to CMOS for new circuit technologies, to ROM, EPROM, EEPROM, 3870 microprocessors and second Zilog sources, and to circuits in demand, in particular prespecified types, for MOS circuits.

In the linear area, priority was given to high-power and high-voltage bipolar circuits, the company's traditional strong points. In the discrete field, the winners were the HV bipolars (in particular, multi-epitaxial transistors) followed by high-power MOS.

Mr Pistorio's second effort was directed toward export outside of Europe, in particular to Asia and the United States where SGS made its turnover go from \$12 million in 1980 to \$35 million in 1982 (see EA, September 17, 1982). By 1986 the Italian company hopes to earn 50 percent of its turnover outside of Europe, which is not surprising when the world market is taken into account (Europe represents only 20 percent of it) but seems ambitious considering the current situation and its European competitors' state of mind. (SGS earns only 2 percent of its turnover with the STET group to which it belongs.)

#### Decreasing Costs

Productivity is the third important strategy. Twenty-four percent of the turnover in 1981 and 28 percent in 1982 was invested, one third of which was devoted to eliminating modernization delays, in particular in the Singapore and Malaysian plants. Mr Pistorio himself estimates that these proportions are too large, but "we have to get ready to work on a healthy basis." In 1983, as a result of the increase in the turnover, investment will be around 18 percent to 20 percent.

Mr Pistorio has also noticed a change in relations with the Italian unions since his arrival: "We now have a dialogue with them and the absenteeism rate has gone from 13.5 percent in 1980 to 8 percent in 1982. It hasn't yet reached the 5 percent rate of our Rennes factory, but we're getting there." Productivity has also been improved thanks to cooperation at the level of casings: The TO 220 transistor casing, for example, can be used for certain high-power integrated circuits. The same line can thus serve several different semiconductors. SGS is particularly satisfied with its Maltese factory: "The cost per hour is 2,000 lira in Singapore, 12,000 lira in Italy and 3,000 lira in Malta. But, in Malta, we have almost no transportation costs and we are in Europe."

At the global level, while the production volume of linear circuits, for example, has grown by 25 percent in 1982, productivity has been improved by

35 percent in the number of chips per hour and by 50 percent at the assembling and testing level; in 1983, these latter two improvements should be 50 percent and 55 percent respectively, which is such that, for these two years, the decrease in cost per circuit should be 25 percent per year. SGS thus claims to be benefiting now in the linear bipolar area from the lower overall costs, which is the reason for the increase in control unit production, for example: eight million components in 1981, 20 million in 1982, and 40 million foreseen for 1983. In this area, it is prices which make for market share.

Mr Pistorio's last strategy is to conclude agreements if not alliances at the European level (see *Electronique Actualités*, February 4, 1983). He is happy, in particular, with the beginnings of collaboration with CNET [National Center for Telecommunications Studies] on the one hand, and with IMAG and RTC on the other in the framework of the CAO [computer-aided design] activities of the European machine plan.

#### Thanks to Supply Gaps

SGS's situation, all in all one of the most attractive at the present time among middle-size European semiconductor companies, is explained essentially by the fact that its basic initial policy has been one of filling supply gaps in the bipolar linear area. SGS was able to make a name for itself in this field thanks to its high-power, high-voltage and, on time punctually, low-noise circuits.

Today the company is enjoying the fruits of this gap-filling policy at three levels:

--mass-production know-how in the area can be applied to MOS circuits and to standard linears on the market, which will promote a more ambitious semiconductor policy at SGS;

--high-power and high-voltage know-how attracts orders that lead to new circuits and strengthen the company's competence and profits in this area;

--abroad, users contact the company regarding high-power circuits to begin with, but then find themselves interested in other products in the catalogue, in particular transistors, specially-designed circuits or certain microprocessors.

The results are spectacular: according to Dataquest, SGS's turnover in MOS went from \$33 million in 1981 to \$45 million in 1982 (+36 percent) in MOS in bipolar linears from \$63 million in 1981 to \$76 million in 1982 (+21 percent), and in discretes from \$50 million to \$49 million (-2 percent, as a result of the fire in the Catagne factory which paralyzed production at this factory for several months). Thus SGS currently shows the highest dollar growth rate worldwide in linear circuits (ahead of Analog Devices: +19 percent).

SGS estimates that its penetration of the American linear bipolar market will move from 1.9 percent in 1982 to 5 percent in 1987, with 2.7 percent in 1983 and 3.5 percent in 1984.

SGS has just begun preliminary production of five-inch chips of bipolar linear circuits in its Castelletto laboratory. Full production of five-inchers is foreseen in 1984.

The production capacity of SGS's MOS unit at Agrate, in Italy, should reach 25,000 chips per month between now and mid-1984. The company has already invested \$40 million in this unit and will invest another \$40 million so as to produce all the planned MOS and C-MOS circuits.

SGS intends this year to try out a version of the 3872 microprocessor with 5V integrated EEPROM.

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## ELECTRONICS

### FRENCH SUPPORT STANDARDIZATION OF DP NETWORK ARCHITECTURES

Paris ELECTRONIQUE ACTUALITES in French 25 Feb 83 p 4

[Article by Ph. Marel: "DIELI Fully Supports Action for Heterogeneous Networks"]

[Text] "Network incompatibility can compromise the future of teleinformation projects and create difficulties." Such is the conclusion of a report made public by the Network Technology Group (composed of CIGREF--Information Processing Club of Large French Enterprises--and Inforep--General Association of Distributed Network Users) on 22 February.

Mr Hirel, director of DIELI (Directorate of Electronics and Data Processing Industry), disclosed at that time the actions that the government intends to take for hastening France's standardization in this area, with the understanding that nothing could be done without an agreement with IBM or before the publication of ISO standards.

The economic and commercial need of users to be able to depend on different manufacturers, while still being able to communicate with each other through heterogeneous equipment, is the keynote of the report published last week by the Network Technology Group.

The major interest of this report is that it was issued by an association of users, CIGREF, GPEM (Permanent Group for Market Studies), and Inforep, which met in May 1982 to provide a solution to the problems raised by equipment heterogeneity.

The apparent contradiction of this statement is in fact aimed at maintaining user autonomy with respect to a single manufacturer, while avoiding increasingly large investments on their part for interfacing heterogeneous equipment, and goes hand in hand with the efforts at international standardization being made by ISO, efforts in which AFNOR (French Association for Standardization) is actively participating.

Moreover, faced with a manufacturer which dominates the market (IBM) and which until now has been particularly reserved about all efforts at standardization, the French industry--according to Mr Hirel--does have something to say as a second source supplier for IBM equipment.

Integration of the DSA architecture (of CII-HB and Honeywell) with IBM's SNA architecture, becomes for the French industry the essential foundation for all standardization efforts. And still according to Mr Hirel, any action that encourages standardization becomes--within a national market--part of a "better adaptation of French industry competitiveness throughout the world."

Based on these observations, DIELI, supported by the efforts already undertaken within the ISO (in which participate most manufacturers, including IBM), has decided to emphasize an action that would hasten the adoption of these standards.

In future orders, the government could thus take into account the equipment's adaptability to heterogeneity. In Mr Hirel's concept, this could reach as far as closing public markets to any system that does not offer the possibility of heterogeneous interconnection.

DIELI's forceful attitude will also be expressed in terms of public support for industry, which will henceforth include assistance to users for developing the integration of their equipment into ISO standards.

Finally, DIELI will propose the development and installation of centers for testing and evaluating heterogeneous procedures, both for manufacturers and users.

#### Attitude of IBM-France

The DIELI position contrasts with the current lack of standards, and on the face of it, does not seem to consider the influence of IBM-France on the national market, and its proverbial circumspection about anything that hints at standardization.

To understand the problem, it is necessary to place the government's actions in a more correct context, and to point out that the ISO model for interconnecting heterogeneous systems is based on the formatting and transmission of information through a software structure created by a seven-layer mathematical model (equivalent to seven successive program processes).

To date, only the protocol for information transfer (fifth layer) proposed by AFNOR has a chance to be adopted by ISO next week in Vienna.

If in this domain, as in many others, it is the first step that counts, we must nevertheless point out that the ISO ad-hoc commissions have been meeting for several years, and that the negotiations should still take some time.

In fact, the actions proposed by Mr Hirel are part of the joint efforts of users (with government agencies among them), manufacturers (among which are the nationalized enterprises), and the government itself, intended to hasten the work and exert pressure on the market.

Added to this is the fact that IBM has always avoided becoming locked into a standardization process, while systematically responding to market pressures in this respect, and at times even getting ahead of all its competitors (as in the case of Transpac in France).

Mr Hirel's indication that so far DIELI has good reasons to count on IBM-France's support in encouraging standardization, may be a sign that in this domain, the largest manufacturer in the world, having observed the trend of the market, could be on the verge of changing its attitude toward ISO decisions. This is the more likely, since according to some opinions, its SNA architecture, which has been on the market for 12 years, no longer meets current needs. IBM could soon replace it with a new architecture called XA, which might--why not!--become a de facto standard. To what extent would XA correspond to ISO standards or influence them? It remains to be seen.

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## BRIEFS

**FIRST EUROPEAN MICROPROCESSOR**--The first microprocessor developed independently by a European semiconductor-manufacturer is being brought to market by Siemens with the designation SAB 80199. The item is a 16-bit processor which differs from its predecessors in its architecture and is designed for fast control tasks. With microprocessors, programming work (software) can be saved by storing a portion of the operating system (that is, the commands which direct the most important elementary functions of the microprocessor) permanently in read-only memory (ram) [as published]. However, not much is gained in speed of operation by doing so, emphasized Siemens representatives during the presentation of the component. For that reason, the architecture of the 80199 was laid out from the beginning so that, in addition to the central processor unit, the most important functions of the real-time operating system could be directly implanted in the chip. They are, the technical German, "implemented in hardware." The 45-square millimeter-processorchip was produced with a channel length of 3  $\mu\text{m}$ , whereby the chip alone encompasses some 40,000 transistor functions. The primary area of utilization for the diminutive chip will be the critical real-time applications for which previous, and not exactly sluggish, 16-bit microprocessors proved themselves yet too slow. For the SAB 80199 is said to respond, according to Siemens, ten times faster than its predecessors. Accordingly, the execution cycle (get an instruction, decode it, carry it out) takes the 80199 only 0.5 microseconds, and this speed is high enough to allow it to run up to eight separate program tasks in a quasi-parallel fashion. This processor can even switch from one task to another in only one microsecond. Hence, it is particularly suited for such applications as the control of a fast printer or a printer terminal, but it is equally suited for the automatic control of auto engines for fuel economy, as well as for typical processing applications. Even though the 80199 is an independent German development--it is nonetheless modeled on the internationally established standards which originate in the USA: it is "bus compatible" with the Intel (and Siemens) "8086" and "8088" 16-bit processors. The changeover to the "fast Bavarian" should, therefore, prove easier for users than would be the case if the 80199 had a completely new bus structure for connecting to peripheral circuits. [Text] [Duesseldorf VDI NACHRICHTEN in German 18 Mar 83 p 14] 12330

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## INDUSTRIAL TECHNOLOGY

### SMALL PRECISION NC MACHINING CENTER DEVELOPED IN FRANCE

Paris L'USINE NOUVELLE in French 14 Apr 83 p 121

[Article by Jean Nenin]

[Text] Faced with the American and Japanese giants, it is still possible to innovate in machine-tools. This has been demonstrated by a PMI (small and medium sized enterprise) in Lorraine, which introduced a small, high precision numerical control (NC) machining center.

In less than one year, an 85-employee PMI, Realmeca (Meuse mechanical fabrication company) at Clermont-en-Argonne, succeeded in perfecting and building a vertical-spindle machining center, thereby entering an area that had not been touched before. "We were led to it," explains Jean Friess, its chief executive, "by our customers' demand for increasingly precise mechanical parts. Since no suitable machine was available, we decided to build one ourselves, first of all for our own needs as subcontractor, and then intending to produce it as pilot model." A market study was first conducted systematically by about 15 of the company's employees. No one was offering anything in that area.

A few months before the world machine-tool exposition, at which it will be shown, the 250 V center is a reality; this is an achievement for which Realmeca has won the regional innovation competition organized by BNP (Banque Nationale de Paris) and Anvar (National Agency for Research Exploitation). The machine requires only 1380 x 1680 mm of floor space, and is 2150 mm high. Make no mistake about it, this 2500-kg half-pint is quite stocky. It conceals a strong, ribbed cast-iron structure, produced at Vaucouleurs, which provides it with the rigidity necessary for machining at tolerances smaller than 5 microns. It requires no foundations. For guidance and positioning, it uses the best in drilling machine technology. As an example, guidance is obtained with a precision of better than 2 microns.

"The large manufacturers," adds Jean-Claude Bertrand, director of sales, "have so far been concerned mostly with intermediate and large capacity machining centers (equal or larger than 500 x 500 x 500 mm), but with a precision that cannot meet the demand of some areas of micromechanics."

## Stainless Steel Can Also be Machined

In September 1982, a full-scale prototype was first developed to verify whether machining specifications matched the designed specifications. That was a model without tool changer, so as not to complicate the issue. "The pursuit of precision must not be masked by difficulties created by a tool changer." In November, the machining center was equipped with a 16-slot tool changer (tools with a diameter of 70 mm and a maximum weight of 2 kg). The changing time is 6 seconds, which amounts to a maximum of 10 seconds from chip to chip. The rotation speed of the ISO 30-cone spindle (3.5 kW motor) varies continuously from 300 to 8000 rpm. A version with a 2.8 kW motor, and with a speed range of 500-10,000 rpm, is planned for the highest quality surface finishes.

The 400 x 300 mm table supports a uniformly distributed 50 kg load. X-axis and Y-axis travel is 250 mm, with the Z-axis motion being extended to 350 mm to allow space for the tool and tool holder. Maximum cutting rates are 1500 mm/min, with rapid advances along each axis reaching 6 m/min.

The parts to be machined are generally cut from an aluminum block, but it is equally possible to machine stainless steel. One particular machining made possible by this center is the Dilver P (of Metal Imphy), suitable for sealing to glass for integrated circuits.

This machining center was introduced because the company wants to remain active in the machine-tool field (more than 700 machines sold throughout the world, particularly thread cutting machines) in addition to mechanical subcontracting. This effort at diversification also explains the creation of a department for high precision industrial valves.

## A Market of 50 Machines per Year

While the prototype is equipped with an Olivetti NC, the final version will have a Num 560 NC with a three-axis switchable or simultaneous control, and with display on a 5-inch CRT screen. "In any case, we are in a position--particularly for exportation--to attach to this center other controls with which our customers are more familiar." Moreover, one horizontal-spindle version will soon correspond to the general trend in flexible shop design.

The market could be 50 machines per year, and a pilot line has already been launched. But at Clermont-en-Argonne, they are waiting impatiently for a decision about the National Education market, which in turn depends on the machine-tool plan. An order would assure mass production and would make it possible to sell the machining center for 570,000 francs, a price which the company leaders consider competitive. "But we have to act fast. We will not be the only ones for long," points out Jean Friess. "I have seen documents in Japanese which prove that they are also concerned with this program."

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## TRANSPORTATION

### FIAT, PEUGEOT COMPLETE JOINT DEVELOPMENT OF ENGINE

Paris LES ECHOS in French 11 Mar 83 p 8

[Article by Airy Routier: "The Development of the Small Fiat-Peugeot SA Engine Is Complete: But There Will Not Be a Joint Release"]

[Text] The small engine that Peugeot SA and Fiat have jointly developed is completed in its three and four cylinder forms. Its performance is better than expected. But its industrial production, and hence its release as models of the two companies, will not be simultaneous as was planned initially. As a matter of fact, an acceleration in the pace of investments by Fiat coincided with a reexamination of priorities at PSA, involving a slight delay in certain future models and in particular the one which was to have provided the replacement for Citroen's smallest engine. As a result, there has been "a delay of a year" for the French group which, according to Vittorio Ghidella, managing director for Fiat Auto "poses some organizational problems."

The 1,000-1,100-cubic-centimeter 4-cylinder engine, which is manufactured by Fiat, will go into production next year so as to appear in the late 1984-early 1985 models. It will not be under French car hoods until late 1985-early 1986.

Since the decision was made under union and political pressure in the two countries to share production of these engines between France and Italy (the Fiat factory in Termoli on the Adriatic and the Sochaux factory in France are being and will be completely renovated for this), this delay should not, at first glance, have posed anything other than commercial problems. In fact, the matter is more complicated since, to gain the maximum benefit from scaled savings, Fiat and Peugeot have divided up the tasks between themselves, accepting "the single source" for a certain number of items. Thus Fiat will make the crankshaft for both companies. The Italian group will not, therefore, be able to produce these items immediately at the optimum pace for lack of an outlet at Peugeot.

#### Wager on the Future

Another problem remains unresolved: that of the derivative three cylinders of approximately 700 cubic centimeters, at first earmarked for

Fiat but which seems to have been taken over by Peugeot. The French group perfected the engine which should, according to the specification, "give performance and comfort comparable to those of the four cylinder at a lower manufacturing cost." This engine, without an equalizing shaft, is now completed. Peugeot will therefore manufacture four cylinder engines in Sochaux, and the three cylinder engines for the two partners. But the management of the PSA group told us that a definite green light for the three cylinder engine has not yet been given.

Thus the veil is gradually being lifted from one of the most ambitious industrial cooperation programs currently under way in Europe. For several reasons. It is not a matter of a low volume item (like, for example, the Volkswagen-Renault automatic transmission). On the contrary, these engines will be used in the economy and mid-priced range for Peugeot-Talbot-Citroen and Fiat--at least a million units per year, and no doubt more.

These numbers, and also the fact that it is by the engines (envisaged for at least 20 years) that the real know-how of an automobile company is judged, show how ambitious this Fiat-Peugeot cooperation is. So much the more since the two companies have accepted the idea of the single source--an optimistic wager on the future.

Of course, it may be regretted that it was not possible to concentrate production in a single factory. But the quantities involved would nevertheless have required the establishment of several parallel chains. Fiat and Peugeot have shared the cost of design and development: nearly Fr 500 million for an engine of this type. And, despite the buffer stocks necessary for security against the whims of the customs officers, the single source for many items will appreciably lower industrialization and production costs. "But one of the most important aspects, neglected at first," affirms one of the PSA heads, "is the cross fertilization between our engineers and Fiat's."

Begun with light commercial vehicles, Peugeot-Citroen-Fiat cooperation will increase in strength and with time. Henceforth, it is a basic fact of the European automobile. Will Renault and Volkswagen rival this line of development with one of their own?

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## TRANSPORTATION

### PEUGEOT TO HAVE UNMANNED FACTORIES BY 1990

Paris AUTO-INDUSTRIES in French 13 Apr 83 pp 1-2

[Text] Paris, 12 April (AFP)--The big "unmanned" factories of the future will soon arrive in France. Jean Krautter, director of data processing and automation announced in Paris on 12 April that the six main plants of the Peugeot automobile group will be completely automated by about 1990 as a result of a several billion franc investment.

Krautter observed that employees will no longer work directly with the machines, but will have a supervisory role, which will allow the workshops to operate 24 hours a day in Sochaux, Mulhouse, Poissy, Rennes, Aulnay, and Vigo (Spain).

The total number of robots, 300 at PSA at present, will be increased to nearly 2000 by 1990. Whereas now only 1 percent of the robots are used for assembly because the tasks are so sophisticated, 7 years from now this proportion will increase to 40 percent, while the party played by spot welding robots will decrease from 65 to 40 percent.

The first stage will be reached this summer with the establishment of an adaptable workshop in Meudon which will be able to handle all programmed operations, whatever the material of the product. After that, the entire Rennes factory will be automated.

The use of robotics is "a question of survival, the only way to stay competitive," Krautter stated; he was not able to give a numerical evaluation of the effects on employment of such a process. He said that transfers or reductions in staff would certainly occur, but that would make it possible to save the French automobile industry as a whole.

Industrial automation--called "productomatics"--will be applied throughout the entire manufacturing process, beginning with computer design with three dimensional diagrams, the automatic transmission of orders for the production of parts by robots, to computerized inventory control.

Peugeot, which will assign Fr 1 billion a year to the computerization of the group, will use robots capable of recognizing the form of a part by means of an attached camera.

The increase in productivity will be "considerable." At times, production costs will be cut in half, delays in production by two-thirds, and current stocks will be divided by six. For example, the forwarding of a draft between two departments, which sometimes used to take 3 weeks, will be accomplished in 1 second and will cost 50 centimes.

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